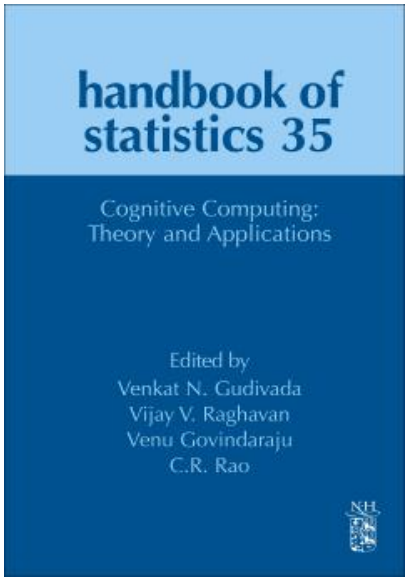
Cognitive Computing: Theory and Applications

BY GUDIVADA,V.N., RAGHAVAN,V.V., GOVINDARAJU, V., RAO, C.R. (EDITORS) - ISBN : 978-0-4446-3744-4



REVIEWED BY PAWAN LINGRAS

A BOOK FOR PRACTITIONERS, POTENTIAL ADAPTERS, AND STUDENTS OF DATA SCIENCE

While the book title is rightfully cognitive computing, I found the book to be as much about data science. It will be useful for current and budding data scientists who are looking to use cognitive computing in their analytics. The book will be an excellent textbook for a first course in a graduate data science program or can introduce data science to senior (fourth-year) undergraduate program. This handbook may in fact serve as a prequel to a previous handbook by these authors called Big Data Analytics. The Big Data Analytics handbook was focused on the issues related to big data. This new handbook focuses more on providing a true understanding of the cognitive computing techniques that are used with datasets of any size- big or small. Since understanding cognitive computing technology is almost a prerequisite to studying big data, students using Cognitive Computing Handbook as a textbook may also find the Big Data Analytics Handbook as an excellent reference for more advanced projects.

The book is divided into three sections. The first section focuses on principles consisting of two chapters, followed by extensive studies of machine learning techniques, and ends with the third section consisting of case studies. I believe one can create a very good course which follows the book very closely. There may not be enough time in a course to go through every detail. However, the chapters are written in an accessible manner that allows students to learn the fundamental principles behind many of the techniques. There is enough mathematics in all the chapters to provide more precise understanding of the topics without overwhelming the reader with symbols and equations. Every chapter provides sufficient list of references that can be used by students to learn the details.

Researchers who are not familiar with cognitive computing, but are looking to apply some of these techniques to their application domains will find this book to be even more useful. There is a certain amount of hype about various new concepts in cognitive computing such as deep learning, random forest, or MapReduce. It is not always obvious if these new and sophisticated techniques are needed in your application. The authors cut through the hype and explain how these concepts were developed from their more fundamental origins and the advantages of using one over the other such as “deep learning versus neural networks” or “decision trees versus random forest”. In this respect, the handbook is also useful for cognitive computing researchers. They cannot always keep up with all the new development. However, they are usually familiar with the fundamental techniques. They can easily understand the advantages of the new techniques over the fundamental building blocks that were used to derive them. While there is a separate application section, all the chapters are tethered to an application through simple examples. The application section provides end-to-end description of case studies. Practitioners can pick a case study that is closest to their interest and adapt it to their own application.

Similar to a previous handbook (Big Data Analytics) by these authors the writing of chapters is fairly consistent, so the readers do not have to adapt to an entirely different writing style. On the other hand, most of the chapters are more or less self-contained. If readers find topics in a particular chapter of a particular interest, they can pretty much start reading from that chapter itself. They do not have to go to a previous chapter to get background information. The consistent treatment has its limits in a multi-authored handbook. One can see different level of details and somewhat different description of certain concepts such as say deep learning. One can even call this a feature. We get different perspectives on the topic in the same handbook.

THE BOOK:

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